DRAFT ENGINEERING EVALUATION
MENLO BUSINESS PARK, LLC
PLANT NO. 18066
APPLICATION NO. 15306

BACKGROUND

Menlo Business Park, LLC is applying for an Authority to Construct and/or Permit to Operate for the following equipment:

S-1 Stationary Standby Generator Set: Diesel Engine; Make: Cummins; Model: 4B3.9-2; 68 HP abated by J-Series Cleaire Bugtrap Active Particulate Filter

This standby generator set will provide emergency power (in the event of a blackout) for essential electrically powered equipment at the site. The standby generator set will be run periodically for brief periods of time to ensure that the unit will function correctly in case of a loss of utility supplied power to the facility.

The equipment will be located at 1455 Adams Drive, Menlo Park, CA 94025.

EMISSIONS SUMMARY

Annual Emissions:

Abated and Unabated emission factors are provided below. The abatement device manufacturer guarantees an 80% reduction in diesel particulate matter, 35% reduction in organic emissions, and a 45% reduction in carbon monoxide emissions.

The manufacturer supplied emission factors for S-1 (per 8178 D2) are listed below:

Component	Unabated Emission (g/hp-hr)	Abated Emission (g/hp-hr)
NOx	5.3400	5.3400
CO	2.9160	1.6038
POC	1.0440	0.6786
PM_{10}	0.5060	0.1012
SO_2	0.0055	0.0055

**The emission factor for SO2 is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors.*

SO_2: 8.09E-3 (% S in fuel oil) lb/hp-hr = 8.09E-3 (0.0015% S) (453.6 g/lb) = 0.0055 g/hp-hr

Pollutants	Factors	hp	Hours	lb/g		lbs/yr	TPY
NOx	= (5.3400 g/hp-hr)*	(68 hp)*	(30 hrs/yr)*	(0.00220 lbs/g)	=	24.02 lbs/yr	0.01201
CO	= (1.6038 g/hp-hr)*	(68 hp)*	(30 hrs/yr)*	(0.00220 lbs/g)	=	7.21 lbs/yr	0.00361
POC	= (0.6786 g/hp-hr)*	(68 hp)*	(30 hrs/yr)*	(0.00220 lbs/g)	=	3.05 lbs/yr	0.00153
PM_{10}	= (0.1012 g/hp-hr)*	(68 hp)*	(30 hrs/yr)*	(0.00220 lbs/g)	=	0.46 lbs/yr	0.00023
SO_2	= (0.0055 g/hp-hr)*	(68 hp)*	(30 hrs/yr)*	(0.00220 lbs/g)	=	0.02 lbs/yr	0.00001

Maximum Daily Emissions:

A full 24-hour day will be assumed since no daily limits are imposed on intermittent and unexpected operations.

For S-1:

Pollutants	Factors	hp	hr/day	lb/g	lbs/day
NOx	= (5.3400 g/hp-hr)*	(68 hp)*	(24 hr/day)*	(0.00220 lbs/g) =	19.213 lbs/day
CO	= (1.6038 g/hp-hr)*	(68 hp)*	(24 hr/day)*	(0.00220 lbs/g) =	5.770 lbs/day
POC	= (0.6786 g/hp-hr)*	(68 hp)*	(24 hr/day)*	(0.00220 lbs/g) =	2.442 lbs/day
PM_{10}	= (0.1012 g/hp-hr)*	(68 hp)*	(24 hr/day)*	(0.00220 lbs/g) =	0.364 lbs/day
SO_2	= (0.0055 g/hp-hr)*	(68 hp)*	(24 hr/day)*	(0.00220 lbs/g) =	0.020 lbs/day

Plant Cumulative Increase: (tons/year)

Pollutant	Existing	New	Total
NOx	0	0.01201	0.01201
CO	0	0.00361	0.00361
POC	0	0.00153	0.00153
PM_{10}	0	0.00023	0.00023
SO_2	0	0.00001	0.00001
NPOC	0	0.01201	0.01201

Toxic Risk Screening:
The applicant agreed to limit the hours of operation of S-1 to 30 hours per year for maintenance and testing. Based on a limit of 30 hours per year, the toxic emission of diesel particulate do not exceed the District Risk Screening Trigger, as shown in Table 1 below, and a Risk Screening Analysis has not been performed.

Table 1. Calculated incremental increase in diesel exhaust particulate matter for S-1

Source:	PM_{10} Emission Factor (g/HP-hr)	HP	Annual Usage (Hours/year)	Diesel Exhaust Particulate Emissions (lb/year):	Trigger Level (lb/yr)	Risk Screen Required? (Yes/No)
1	0.1012	68	30	0.46	0.58	No

STATEMENT OF COMPLIANCE

The owner/operator of S-1 shall comply with Reg. 6 (Particulate Matter and Visible Emissions Standards) and Reg. 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). Since this engine meets TBACT for PM10 (<0.15 g/hp-hr), it is expected to comply with Reg. 6. Ultra-low sulfur diesel (0.0015wt%) will be used to meet the sulfur limitation of 0.5wt% in Reg. 9-1-304. Because S-1 is an emergency standby generator, Reg. 9-8-110 (Inorganic Gaseous Pollutants: Nitrogen Oxides from Stationary Internal Combustion Engines) exempts the requirements for emission limits of Sections 9-8-301, 302, and 502. Allowable operating hours and the corresponding record keeping in Reg. 9-8-330 and 530 will be included in the Permit Conditions below.

S-1 will comply with the Airborne Toxics Control Measure for Stationary Compression Ignition Engines (ATCM). The allowable operating hours and recordkeeping requirements contained in the ATCM will be included in the Permit Conditions below.

The project is considered to be ministerial under the District's CEQA regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors and therefore is not discretionary as defined by CEQA. (Permit Handbook Chapter 2.3)

The project is located within 1000 feet from the outer boundary of Costano Elementary School. The project is subject to the public notification requirements of Reg. 2-1-412.

Best Available Control Technology:

In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}.

Based on the emission calculations above, the owner/operator of S-1 is subject to BACT for the following pollutants: NOx. BACT 1 levels do not apply for ‘engines used exclusively for emergency use during involuntary loss of power’ as per Reference b, Document 96.1.2 of the BAAQMD BACT Guidelines for IC Engines. Hence, the owner/operator has to the meet BACT 2 limits presented below.

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice 3. TBACT	TYPICAL TECHNOLOGY
NOx	1. *1.5 g/bhp-hr [107 ppmvd @ 15% O_2] a,b* 2. *6.9 g/bhp-hr [490 ppmvd @ 15% O_2] a,b,c* 3. *6.9 g/bhp-hr [490 ppmvd @ 15 % O2] d*	1. *Selective Catalytic Reduction (SCR) + Timing Retard + Turbocharger w/ Intercooler a,b* 2. *Timing Retard $\leq 4^o$ + Turbocharger w/ Intercooler a,b,c* 3. *Timing Retard $\leq 4^o$ + Turbocharger w/ Intercooler*

References

a. CARB/CAPCOA Clearinghouse
b. BAAQMD NOTE: IC Engine BACT and TBACT is a low emitting, spark-ignited, gas-fueled engine with lean burn combustion or rich burn with non-selective catalytic reduction, or electric motor. A diesel engine will be permitted only if a gas-fueled engine, or electric motor, is not practical (e.g., a remote location without natural gas availability or electric power, or only a diesel engine will meet the portability and/or power/torque/rpm requirements of the application under review, or the engine is used exclusively for emergency use during involuntary loss of power).
c. Timing retard, etc. controls alone may be acceptable only in very limited situations for temporary sources.

For NOx, the emission limits set by BACT 2 are met, as shown in Table 2 below.

Table 2. BACT Limits for S-1

Pollutant	Engine Emission Factors (g/hp-hr)	Emission Factor Limits as set by BACT 2 (g/hp-hr)	Have the limits been met?
NOx	5.34	6.90	YES

Therefore, S-1 is determined to be in compliance with the BACT 2 limits for NOx.

Manufacturer supplied data (ISO 8178 D2) was used to establish the NOx emission factor, the BACT 2 emission limit has not been incorporated into the permit conditions and is assumed to be in compliance through the design standards demonstrated by the ISO 8178 D2 testing.

Offsets: Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NOx. Based on the emission calculations above, offsets are not required for this application.

PSD, NSPS, and NESHAPS do not apply.

PERMIT CONDITIONS

COND# 23306 ----------

1. Operating for reliability-related activities is limited to 30 hours per year per engine.

   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(B)(3) or Regulation 2-5]

2. The owner or operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited.

   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3)] or (e)(2)(B)(3)]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.

   [Basis:"Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection(e)(4)(G)(1)]

4. The owner/operator shall operate each emergency standby engine only when abated by a catalytic diesel particulate filter. The owner/operator shall ensure that the catalytic diesel particulate filter is operated in accordance with manufacturer instructions and properly maintained.
   [Basis: BACT, TBACT, Cumulative Increase]

5. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.
   a. Hours of operation for reliability-related activities (maintenance and testing).
   b. Hours of operation for emission testing to show compliance with emission limits.
   c. Hours of operation (emergency).
   d. For each emergency, the nature of the emergency condition.
   e. Fuel usage for each engine(s).

   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I), (or, Regulation 2-6-501)]

6. At School and Near-School Operation:
   If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

   The owner or operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:

   a. Whenever there is a school sponsored activity (if the engine is located on school grounds).

   b. Between 7:30 a.m. and 3:30 p.m. on days when School is in session.

   "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property.

   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(1)] or (e)(2)(B)(2)]
   End of Conditions

RECOMMENDATION
Issue an Authority to Construct to Menlo Business Park, LLC for:

S-1 Stationary Standby Generator Set: Diesel Engine; Make: Cummins; Model: 4B3.9-2; 68 HP abated by J-Series Cleaire Bugtrap Active Particulate Filter

EXEMPTIONS
None.

By:_____ Date: 2/23/07

Brian Lusher
Air Quality Engineer II